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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/588,490	06/06/2000	Bharat Tarachand Doshi	48-11	9155

7590 11/17/2004

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EXAMINER	
BURGESS, BARBARA N	
ART UNIT	PAPER NUMBER
2157	

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/588,490	DOSHI ET AL.9	
	Examiner	Art Unit	
	Barbara N Burgess	2157	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 10-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7, 10-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to amendments filed on August 10, 2004. Claims 8 and 9 are cancelled as requested by Applicants. Claims 1-7, 10-17 are presented for further examination.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-7, 10-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomizawa et al. (hereinafter "Tomi", US 2001/0003833 A1) in view of Sharma et al. (hereinafter "Sharma", US Patent No 5,986,783).

As per claims 1, 16, and 17, Tomi discloses a method and apparatus of routing traffic between first and second nodes in a network so as to provide protection against network failures, the method comprising the steps of:

- Routing units of traffic on corresponding sets of trunks connected between the first and second nodes such that the traffic is balanced between disjoint paths (paragraphs [0027]-[0029], [0031]-0032], [0080], [0082]);
- Implementing a restoration process for the traffic (paragraphs [0028], [0041], [0083], [0087], [0102], [0118]);

- A given one of the units of traffic comprising a unit of traffic to be transmitted in a direction from the first node to the second node (paragraphs [0027]-[0029], [0031]-0032], [0080], [0082]).

Tomi does not explicitly discloses:

- The first and second nodes being connected by first and second sets of trunks such that the nodes and sets of trunks form a ring having at least four trunks, the first set of trunks being associated with one of an upper portion and a lower portion of the four-trunk ring, the second set of trunks being associated with the other of the upper portion and the lower portion of the four-trunk ring, wherein each of the first and second sets of trunks includes a primary trunk and a backup trunk;
- A given one of the units of traffic comprising a unit of traffic to be transmitted in a direction from the first node to the second node utilizing one of the upper portion and the lower portion of the four-trunk ring;
- Wherein the first and second nodes are configured to perform, in conjunction with the restoration process for the given unit of traffic, span switching between the primary trunk and the backup trunk of the associated portion of the four-trunk ring.

However, in an analogous art, Sharma discloses in a four-fiber self-healing ring network, each node is connected to its adjacent nodes through two pairs of fibers (carrying signals in opposite directions). One fiber in each such pair is called the "working" fiber, the other fiber is termed the "protection" fiber and may be used when the working fiber facility fails. The directions are referred to as clockwise and counterclockwise or upstream and downstream, or west or east. In the four-fiber bi-

directional line switch ring each fiber has a counterpart of a pair of fibers, called the working and protection fibers. The switching between the working and protection fibers is done using span switching (column 2, lines 45-50, 60-62, column 6, lines 20-24, 36-40, 48-51, 59-62, column 8, lines 6-10, 43-46, column 12, lines 8-40).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate a four-trunk ring and span switching in Tomi in order to support dynamic routing and restoration of network services in the event of a failed fiber link.

As per claim 2, Tomi discloses wherein the given unit of traffic comprises one or more OC-x units of traffic (paragraphs [0080]-[0082]).

As per claim 3, Tomi discloses wherein the service layer switching process comprises a packet-based switching process (paragraphs [0028], [0041], [0083], [0087], [0102], [0118]).

As per claim 4, Tomi discloses wherein the service layer switching process comprises an Internet protocol (IP) switching process (paragraphs [0028], [0041], [0083], [0087], [0102], [0118]).

As per claim 5, Tomi discloses wherein the first and second nodes are connected by first and second sets of trunks, each of the sets of trunks including multiple trunks, with

each of the trunks in a given set of trunks supporting a designated portion of at least one of the units of traffic (paragraphs [0080]-[0082], [0087], [0096]-[0098]).

As per claim 6, Tomi discloses wherein the units of traffic are routed such that a first half of the given one of the units of traffic is routed on the first trunk, and a second half of the given unit is routed on the second trunk (paragraphs [0081]-[0083]).

As per claim 7, Tomi discloses wherein the restoration process is implemented using service layer switching (paragraphs [0028], [0041], [0083], [0087], [0102], [0118]).

As per claim 8, Tomi discloses wherein the first and second nodes are connected by first and second sets of trunks such that the nodes and sets of trunks form a four-trunk ring, wherein each of the first and second sets of trunks includes a primary trunk and a backup trunk (paragraph [0028], [0031], [0032], [0035], [0082], [0087], [0093], [0104]).

As per claim 9, Tomi further discloses wherein at least one of the units of traffic is routed on one of an upper or lower portion of the ring (paragraphs [0083]-[0085], Figures 5-6, 13-14).

As per claim 10, Tomi discloses wherein the at least one unit of traffic is split equally between the primary trunk and the backup trunk associated with the upper and lower portion of the ring (paragraphs [0081]-[0083]).

As per claim 11, Tomi discloses wherein the at least one unit of traffic is routed entirely on the primary trunk associated with the upper or lower portion of the ring (paragraphs [0083]-[0085], Figures 5-6, 13-14).

As per claim 12, Tomi further discloses wherein the ring comprises an IP/optical hybrid ring, and the restoration process is implemented using service layer switching (paragraphs [0028], [0041], [0083], [0087], [0102], [0118]).

As per claim 13, Tomi discloses wherein the ring comprises a SONET/optical ring, and the restoration process is implemented using transport layer switching (paragraphs [0013], [0028], [0041], [0083], [0087], [0102], [0118]).

As per claim 14, Tomi does not explicitly disclose wherein the first and second nodes comprise add-drop multiplexers connected by the sets of trunks, each of the add-drop multiplexers also being coupled to a corresponding router.
However, in an analogous art, Sharma discloses each node includes add-drop multiplexer terminal equipment that originates and terminates signals traversing the

various links in the ring (column 2, lines 50-53, column 5, lines 20-22, column 6, lines 5-8, column 10, lines 4-6).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate the add-drop multiplexers in Tomi in order to establish bi-directional operation on a single fiber.

As per claim 15, Tomi discloses wherein the units of traffic are routed between the first and second nodes so as to provide an opportunity to implement an enhanced quality of service for at least one of the units of traffic (paragraphs [0027]-[0029], [0031]-0032], [0080], [0082]).

Response to Arguments

The Office notes the following arguments:

(a) Applicants initially note that claim 14 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Tomizawa in view of Sakano. Applicants traverse on the grounds that the Sakano reference, filed March 14, 2001, is not prior art relative to the present application. The rejection is therefore believed to be improper.

(b) It is believed a four-trunk ring arrangement with span switching capability of the type recited in the claims as amended is not shown or suggested by Tomizawa or the other art of record.

In response to:

(a)-(b) Applicant's argument has been considered but is moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara N Burgess whose telephone number is (571) 272-3996. The examiner can normally be reached on M-F (8:00am-4:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on (703) 308-7562. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Barbara N Burgess
Examiner
Art Unit 2157

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November 12, 2004

ARIO ETIENNE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100